

Answer the questions in the spaces provided on the question sheets. If you run out of room for an answer, continue on the back of the page. Be succinct. Longer answers don't increase your chance of being right, but increase your chance of saying something wrong. **Show how you got your answers in mathematical questions**

Name: \_\_\_\_\_

1. Say whether the propositions are True or False. If they are False, justify.
- (a) When a competitive firm hires labor up to the point at which the value of the marginal product of labor equals the wage, it also produces up to the point at which the price of output equals average variable cost.

**Solution:** False. When a competitive firm hires labor up to the point at which the value of the marginal product of labor equals the wage, it will produce up to the point where  $P=MC$ .

- (b) Corrective taxes (used to compensate for externalities) reduce deadweight loss.

**Solution:** True.

- (c) A road can be either a private good, a public good, a common resource or a club good, depending on the rules or circumstances.

**Solution:** True.

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2. Omega Custom Cabinets produces and sells custom bathroom vanities. The firm has determined that if it hires 10 workers, it can produce 20 vanities per week. If it hires 11 workers, it can produce 22 vanities per week. It sells each vanity for \$800, and it pays each of its workers \$1,000 per week. Which of the following is correct?
- A. For the 11th worker, the marginal profit is \$600.**
  - B. For the 11th worker, the marginal revenue product is \$2,000.
  - C. The firm is maximizing its profit.
  - D. If the firm is employing 11 workers, then its profit would increase if it cut back to 10 workers.
3. Paul is the owner of Paul's Popcorn Palace. Paul is a profit-maximizing owner whose firm operates in a competitive market. An additional worker costs Paul \$200 and has a marginal productivity of 40 canisters of popcorn. Assuming no other variable costs, what is the marginal cost of a popcorn?
- A. \$200
  - B. \$8
  - C. \$5**
  - D. There is insufficient information available to answer this question
4. Lindas Autoplex performs oil changes on automobiles, light trucks, and sport utility vehicles. She is a profit-maximizing business owner whose firm operates in a competitive market. The marginal cost of an oil change is \$20. The marginal productivity of the last worker that Linda hired was 1.5 oil changes per hour. What is the maximum hourly wage that Linda was willing to pay the last worker hired?
- A. \$10
  - B. \$15
  - C. \$20
  - D. \$30**
5. If the demand curve for beef shifts to the right, then the demand curve for butchers will, in the absence of other factors:
- A. Shift to the right**
  - B. Shift to the left
  - C. Remain unchanged
  - D. Shift to the right or to the left. Both are possible

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6. Which of the following would shift a market labor supply curve to the left?
- A. An increase in the wage paid to workers in a competing market**
  - B. Labor-saving technology
  - C. A change in worker tastes so that workers want to retire later
  - D. An increase in immigration
7. When the wages paid to government economists increase, the labor supply curve for academic economists:
- A. Shifts to the right.
  - B. Shifts to the left.**
  - C. Will become backward-sloping.
  - D. Will not change.
8. When externalities are present in a market, the well-being of market participants
- A. and market bystanders are both directly affected.
  - B. and market bystanders are both indirectly affected.
  - C. is directly affected, and market bystanders are indirectly affected.**
  - D. is indirectly affected, and market bystanders are directly affected.
9. Since restored historic buildings convey a positive externality, local governments may choose to
- A. regulate the demolition of them
  - B. provide tax breaks to owners who restore them.
  - C. increase property taxes in historic areas.
  - D. Both a and b are correct.**
10. Research into new technologies provides a
- A. negative externality, and too few resources are devoted to research as a result.
  - B. negative externality, and too many resources are devoted to research as a result.
  - C. positive externality, and too few resources are devoted to research as a result.**
  - D. positive externality, and too many resources are devoted to research as a result.

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The following table shows the private value, private cost, and external cost for various quantities of output in a market. Use it to answer the following 4 questions:

Quantity	Private Value	Private Cost	External Cost
1	\$14	\$10	\$2
2	13	11	2
3	12	12	2
4	11	13	2
5	10	14	2
6	9	15	2
7	8	16	2

11. What is the equilibrium quantity of output in the market?
  - A. 2 units
  - B. 3 units**
  - C. 4 units
  - D. 5 units
  
12. What is the socially-optimal quantity of output in this market?
  - A. 1 units
  - B. 2 units**
  - C. 3 units
  - D. 4 units
  
13. How large would a corrective tax need to be to move this market from the equilibrium outcome to the socially-optimal outcome?
  - A. \$2**
  - B. \$3
  - C. \$9
  - D. \$10

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14. Which of the following statements is correct?
- A. If the external benefit per unit of output were \$0 instead of \$2, then the socially efficient quantity of output would be 4 units.
  - B. A tax of \$4 per unit would enable this market to move from the equilibrium quantity of output to the socially optimal level of output.
  - C. Taking the external cost into account, total surplus declines when the 3rd unit of output is produced and consumed.**
  - D. The market for flu shots is a market to which the concepts in this table apply very well.
15. A congested side street in your neighborhood is
- A. Excludable and rival in consumption.
  - B. Excludable and not rival in consumption.
  - C. Not excludable and rival in consumption.**
  - D. Not excludable and not rival in consumption.
16. The Mansfield Public Library has a large number of books that anyone with a library card may bor-row. Anyone can obtain a card for free. Because the number of copies of each book is limited, not everyone can have the same book at the same time. What type of good would the library books be classified as in this case?
- A. Private goods
  - B. Club goods
  - C. Common resources**
  - D. Public goods
17. The U.S. patent system
- A. makes general knowledge excludable
  - B. makes specific, technical knowledge excludable**
  - C. creates a disincentive to invent
  - D. Both a and b are correct

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18. The privately-owned school system in Smalltown has a virtually unlimited capacity. It accepts all applicants and operates on both tuition and private donations. Although every resident places value on having an educated community, the school's revenues have suffered lately due to a large decline in private donations from the elderly population. Since the benefit that each citizen receives from having an educated community is a public good, which of the following would **not** be correct?
- A. The free-rider problem causes the private market to undersupply education to the community.
  - B. The government can potentially help the market reach a socially optimal level of education.
  - C. A tax increase to pay for education could potentially make the community better off.
  - D. The private market is the best way to supply education**
19. In deciding whether a good is a public good, one must determine the
- A. incomes of those who benefit from the good.
  - B. value of the external benefits that accrue to resource owners.
  - C. excludability of the good.**
  - D. All of the above are correct.

Consider the town of Anywhere with only three residents, Mary, Bill, and Tricia. The three residents are trying to determine how large, in acres, they should build the public park. The table below shows each residents willingness to pay for **each** acre of the park.

Acres	Mary	Bill	Tricia
1	\$14	\$18	\$30
2	10	14	26
3	6	10	22
4	4	6	18
5	2	3	14
6	0	1	10
7	0	0	6

20. Suppose the cost to build the park is \$33 per acre. How many acres should the park be to maximize total surplus from the park in Anywhere?
- A. 2 acres
  - B. 3 acres**
  - C. 4 acres
  - D. 5 acres

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21. Suppose the cost to build the park is \$16 per acre. How many acres should the park be to maximize total surplus from the park in Anywhere?
- A. 2 acres
  - B. 3 acres
  - C. 4 acres
  - D. 5 acres**
22. Suppose the cost to build the park is \$33 per acre and that the residents have agreed to split the cost of building the park equally. If the residents vote to determine the size of park to build, basing their decision solely on their own willingness to pay (and trying to maximize their own surplus), what is the largest park size for which the majority of residents would vote yes?
- A. 0 acres
  - B. 1 acre
  - C. 2 acres**
  - D. 3 acres
23. Suppose the cost to build the park is \$15 per acre and that the residents have agreed to split the cost of building the park equally. If the residents vote to determine the size of park to build, basing their decision solely on their own willingness to pay (and trying to maximize their own surplus), what is the largest park size for which the majority of residents would vote yes?
- A. 1 acre
  - B. 2 acres
  - C. 3 acres
  - D. 4 acres**
24. Suppose the cost to build the park is \$33 per acre and that the residents have agreed to split the cost of building the park equally. To maximize his own surplus, how many acres would Bill like An-ywhere to build?
- A. 0 acres
  - B. 1 acre
  - C. 2 acres**
  - D. 3 acres

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25. Suppose the cost to build the park is \$33 per acre and that the residents have agreed to split the cost of building the park equally. If the residents decide to build a park with size equal to the number of acres that maximizes total surplus from the park, how much total surplus will Mary receive?
- A. -\$6
  - B. -\$3**
  - C. \$3
  - D. \$10
26. Which of the following statements is **not** correct?
- A. Environmental degradation is an example of the Tragedy of the Commons
  - B. Cost-benefit analysis is an important tool that economists use to evaluate the benefits of providing a public good.
  - C. Some goods, such as lighthouses, may be either private or public goods.
  - D. The free-rider problem prevents governments from supplying public goods**
27. On hot summer days, electricity-generating capacity is sometimes stretched to the limit. At these times, electric companies may ask people to voluntarily cut back on their use of electricity. An economist would suggest that
- A. every electric customer has an incentive to prevent the system from overloading, so this voluntary approach is the most efficient
  - B. it would be more efficient if the electric company raised its rates for electricity at peak times**
  - C. it would be more efficient to have a lottery to decide who had to cut back their use of electricity at peak times
  - D. it would be more efficient to force everyone to cut their usage of electricity by the same amount